LineUp With Math[TM] **Alignment** **High School Mathematics Grade-Span Expectations** **March 20, 2006 v.7.0**

Strand: Number, and Operations

Grade-Span Expectations	*LineUp With Math*[TM] **Activities**
M(N&O) –10–4 **Accurately solves problems involving** rational numbers within mathematics, across content strands, disciplines or contexts (with emphasis on, but not limited to, proportions, percents, ratios, and rates).	--Use an interactive simulator plus calculation worksheets to apply proportional reasoning to identify and resolve distance, rate, time conflicts in air traffic control. --Use percent relationships to resolve distance, rate, time conflicts in air traffic control.
M(N&O)–HS–7 **Makes estimates** in a given situation (e.g., tips, discounts, tax, the value of a non-perfect square root or cube root) by identifying when estimation is appropriate, selecting the appropriate method of estimation; determining the level of accuracy needed given the situation; analyzing the effect of the estimation method on the accuracy of results; evaluating the reasonableness of solutions appropriate to GSEs across content strands.	--Predict and resolve aircraft conflicts and explain results of mathematical calculations and simulations.

Strand: Geometry and Measurement

Grade-Span Expectations	*LineUp With Math*[TM] **Activities**
M(G&M)–10–7 **Uses units of measure appropriately and consistently** when solving problems across content strands; makes conversions within or across systems and makes decisions concerning an appropriate degree of accuracy in problem situations involving measurement in other GSEs.	--Apply mathematics to solving distance, rate, and time problems for aircraft conflict scenarios.

Strand: Problem Solving, Reasoning, and Proof

Grade-Span Expectations High School	*LineUp With Math*[TM] **Activities**
M(PRP)–HS–1 **Students will use problem-solving strategies to investigate and understand increasingly complex mathematical content** and be able to:	--Apply mathematics to solving distance, rate, and time problems for aircraft conflict scenarios. --Explore and apply a variety of strategies to optimize

	the solution of air traffic control conflicts.
• Expand the repertoire of problem-solving strategies and use those strategies in more sophisticated ways. • Use technology whenever appropriate to solve real-world problems (e.g., personal finance, wages, banking and credit, home improvement problems, measurement, taxes, business situations, purchasing, and transportation). • Formulate and redefine problem situations as needed to arrive at appropriate conclusions.	

Strand: Communication, Connections, and Representations

Grade-Span Expectations High School	*LineUp With Math*[TM] **Activities**
M(CCR)–HS–1 **Students will communicate their understanding of mathematics** and be able to: • Explain and justify their thinking and develop increasingly sophisticated questions for given problem-situations. • Critique and follow the logic of arguments presented within mathematics and across disciplines.	--Use an interactive simulator plus calculation worksheets to model and resolve air traffic control conflicts. --Predict and resolve aircraft conflicts and explain results of mathematical calculations and simulations.
M(CCR)–HS–2 **Students will create and use representations to communicate mathematical ideas and to solve problems** and be able to: • Choose appropriate representations and mathematical language (e.g., spreadsheets, geometric models, algebraic symbols, tables, graphs, matrices) to present ideas clearly and logically for a given situation. • See a common structure in mathematical phenomena that come from very different contexts (e.g., the sum of the first *n* odd natural numbers, the areas of square gardens, and the distance traveled by a vehicle that starts at rest and accelerates at a constant rate can be represented by functions of the form $f(x) = ax^2$). • Find representations that model essential features of a mathematical situation (e.g., cost of postage can be modeled by a step-function). • Use representations as a primary means for expressing and understanding more abstract mathematical concepts.	--Use an interactive simulator plus calculation worksheets to model and resolve air traffic control conflicts.

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M(CCR)–HS–3 Students will recognize, explore, and develop mathematical connections and be able to: • Explain in oral or written form how mathematics connects to other disciplines, to daily life, careers, and society (e.g., geometry in art and literature, data analysis in social studies, and exponential growth in finance). • Explain multiple approaches that lead to equivalent results when solving problems.	--Apply mathematics to solving distance, rate, and time problems for aircraft conflict scenarios. --Predict and resolve aircraft conflicts and explain results of mathematical calculations and simulations.